



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,431	09/26/2003	John M. Burns	HSJ9-2003-140-US1	8425

23980 7590 06/29/2006

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C
1400 PAGE MILL ROAD
PALO ALTO, CA 94304-1124

EXAMINER

RENNER, CRAIG A

ART UNIT	PAPER NUMBER
----------	--------------

2627

DATE MAILED: 06/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/672,431	Applicant(s) BURNS ET AL.	
	Examiner Craig A. Renner	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 18-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>26 September 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of "Group I, claims 1-17" in the reply filed on 31 May 2006 is acknowledged. Accordingly, claims 18-31 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim.

Drawings

2. The drawings were received on 26 September 2003. These drawings are accepted.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

4. The disclosure is objected to because of the following informalities:

In line 2 of claim 6, a period (i.e., ".") should be inserted after "bearing" for better clarity. Appropriate correction is required.

Art Unit: 2627

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Karis et al. (US 6,194,360).

Karis et al. (US 6,194,360) teaches a disk drive system comprising a rotatably mounted magnetic disk (2); a rotor (38) coupled to the magnetic disk; a stator (64) for rotatably retaining the rotor; a bearing (includes 52, for instance) that serves as an interface between the stator and the rotor (as shown in FIG. 3, for instance); a motor (includes 60, for instance) coupled to the rotor for rotating the magnetic disk via the rotor; and a lubricant disposed in the bearing (lines 20-21 in column 3, for instance), wherein the lubricant is comprised of a lubricating medium (line 12 in column 4, for instance, i.e., "oil", for instance) and a charge-control additive (lines 57-58 in column 4, for instance, i.e., "copolymer of phenylnaphthylamine and dioctyldiphenylamine") for

reducing charge accumulation in the bearing (i.e., the copolymer of phenylnaphthylamine and dioctyldiphenylamine will inherently reduce charge accumulation in the bearing to some extent) [as per claim 1]; wherein the motor is constructed to rotate the rotor at a rate greater than 3,500 revolutions per minute (line 63 in column 1, for instance) [as per claim 3]; wherein the lubricating medium is comprised of an oil (line 12 in column 4, for instance) [as per claim 9]; wherein the charge-control additive is in the lubricating medium (lines 55-58 in column 4, for instance) [as per claim 10]; wherein the charge-control additive is comprised of dioctyldiphenylamine, an oligomer thereof, or a combination of the foregoing (line 58 in column 4, for instance) [as per claim 11]; wherein the charge-control additive is comprised of phenylnaphthylamine, an oligomer thereof, or a combination of the foregoing (line 57 in column 4, for instance) [as per claim 12] wherein the charge-control additive is further comprised of dioctyldiphenylamine, an oligomer thereof, or a combination of the foregoing (line 58 in column 4, for instance) [as per claim 13]; and wherein the charge-control additive is comprised of an oligomer of phenylnaphthylamine and dioctyldiphenylamine (lines 57-58 in column 4, for instance) [as per claim 14]. As the claims are directed to "disk drive system", per se, the method limitation(s) appearing in line 2 of claim 10 can only be accorded weight to the extent that they affect the structure of the completed disk drive system. Note that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "solubilized or dissolved", for instance], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of

prior art, even if prior product was made by a different process”, *In re Thorpe, et al.*, 227 USPQ 964 (CAFC 1985). Furthermore, note that a “[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., “solubilized or dissolved”, for instance], is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations”, *In re Hirao and Sato*, 190 USPQ 685 (CCPA 1976).

8. Claims 1-5, 9-10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Khan et al. (US 5,907,456).

Khan et al. (US 5,907,456) teaches a disk drive system (10) comprising a rotatably mounted magnetic disk (part of 16); a rotor (36) coupled to the magnetic disk; a stator (38) for rotatably retaining the rotor; a bearing (37) that serves as an interface between the stator and the rotor; a motor (32) coupled to the rotor for rotating the magnetic disk via the rotor; and a lubricant (60) disposed in the bearing, wherein the lubricant is comprised of a lubricating medium (line 58 in column 7, for instance, i.e., “oil”, for instance) and a charge-control additive (lines 31-32 in column 7, for instance, i.e., “phenyl alpha naphthylamine”) for reducing charge accumulation in the bearing (i.e., phenyl alpha naphthylamine will inherently reduce charge accumulation in the bearing to some extent) [as per claim 1]; wherein the disk drive system further comprises a plurality of rotatably mounted and spaced-apart magnetic disks (16) mounted on the rotor, such that the motor rotates the magnetic disks via the rotor (lines 49-53 in column 3, for instance) [as per claim 2]; wherein the motor is constructed to rotate the rotor at a

Art Unit: 2627

rate greater than 3,500 revolutions per minute (lines 48-51 in column 1, for instance) [as per claim 3]; wherein the bearing is a journal bearing (includes 44 and 46) [as per claim 4]; wherein the bearing is a thrust bearing (45) [as per claim 5]; wherein the lubricating medium is comprised of an oil (line 58 in column 7, for instance) [as per claim 9]; wherein the charge-control additive is in the lubricating medium (lines 58-62 in column 7, for instance) [as per claim 10]; and wherein the charge-control additive is comprised of phenyl naphthylamine, an oligomer thereof, or a combination of the foregoing (lines 31-32 in column 7, for instance) [as per claim 12]. As the claims are directed to "disk drive system", per se, the method limitation(s) appearing in line 2 of claim 10 can only be accorded weight to the extent that they affect the structure of the completed disk drive system. Note that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "solubilized or dissolved", for instance], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior product was made by a different process." See *In re Thorpe, et al.*, supra.

Furthermore, note that a "[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., "solubilized or dissolved", for instance], is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations." See *In re Hirao and Sato*, supra.

9. Claims 1-2, 4-5, 10, and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Diaz et al. (US 5,886,854).

Diaz et al. (US 5,886,854) teaches a disk drive system (10) comprising a rotatably mounted magnetic disk (42); a rotor (includes 54, for instance) coupled to the magnetic disk; a stator (includes adjacent 52, for instance) for rotatably retaining the rotor; a bearing (56 and/or 60) that serves as an interface between the stator and the rotor; a motor (52) coupled to the rotor for rotating the magnetic disk via the rotor; and a lubricant (lines 40-41 in column 4, for instance) disposed in the bearing, wherein the lubricant is comprised of a lubricating medium and a charge-control additive for reducing charge accumulation in the bearing (lines 22-24 in column 5, for instance) [as per claim 1]; wherein the disk drive system further comprises a plurality of rotatably mounted and spaced-apart magnetic disks (each 42) mounted on the rotor, such that the motor rotates the magnetic disks via the rotor [as per claim 2]; wherein the bearing is a journal bearing (60) [as per claim 4]; wherein the bearing is a thrust bearing (56) [as per claim 5]; wherein the charge-control additive is in the lubricating medium (lines 22-24 in column 5, for instance) [as per claim 10]; wherein the lubricant is further comprised of a conductivity-enhancing additive (line 8 in column 8, for instance, i.e., "polyaniline") for enhancing the electrical conductivity of the lubricant (i.e., polyaniline will inherently enhance the electrical conductivity of the lubricant to some extent) [as per claim 15]; wherein the conductivity enhancing additive is in the lubricating medium (lines 8-10 in column 8, for instance) [as per claim 16]; and wherein the conductivity-enhancing additive is comprised of an aniline, an oligomer thereof, a polymer thereof, or

Art Unit: 2627

a combination of the forgoing (line 8 in column 8, for instance) [as per claim 17]. As the claims are directed to "disk drive system", per se, the method limitation(s) appearing in line 2 in each of claims 10 and 16 can only be accorded weight to the extent that they affect the structure of the completed disk drive system. Note that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "solubilized or dissolved", for instance], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior product was made by a different process." See *In re Thorpe, et al.*, supra. Furthermore, note that a "[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., "solubilized or dissolved", for instance], is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations." See *In re Hirao and Sato*, supra.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

Art Unit: 2627

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diaz et al. (US 5,886,854) in view of Konno et al. (US 5,358,339).

Diaz et al. (US 5,886,854) teaches the disk drive system as detailed in paragraph 9, supra. Diaz et al. (US 5,886,854), however, remains silent as to "wherein the bearing is a spiral groove bearing" as per claim 6, "wherein the bearing is a herringbone groove bearing" as per claim 7, and "wherein the bearing is formed from surfaces that are embossed with grooves" as per claim 8.

Konno et al. (US 5,358,339) teaches a bearing (33) being a spiral groove bearing (line 55 in column 1, for instance) in the same field of endeavor for the purpose of enabling the bearing to be a thrust bearing. Konno et al. (US 5,358,339) likewise teaches a bearing (34) being a herringbone groove bearing (lines 59-60 in column 1, for instance) in the same field of endeavor for the purpose of enabling the bearing to be a radial journal bearing. Konno et al. (US 5,358,339) lastly teaches a bearing (33, 34 or 37) being formed from surfaces that are embossed with grooves (lines 53-61 in column 1, for instance) for the purpose of enabling the bearing to be a thrust bearing and/or a radial journal bearing. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the bearing of Diaz et al. (US 5,886,854) be a spiral groove bearing as taught by Konno et al. (US 5,358,339), the bearing of Diaz et al. (US 5,886,854) be a herringbone groove bearing as taught by

Konno et al. (US 5,358,339), and the bearing of Diaz et al. (US 5,886,854) be formed from surfaces that are embossed with grooves as taught by Konno et al. (US 5,358,339). The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the bearing of Diaz et al. (US 5,886,854) be a spiral groove bearing as taught by Konno et al. (US 5,358,339), the bearing of Diaz et al. (US 5,886,854) be a herringbone groove bearing as taught by Konno et al. (US 5,358,339), and the bearing of Diaz et al. (US 5,886,854) be formed from surfaces that are embossed with grooves as taught by Konno et al. (US 5,358,339) since such enables the thrust and journal bearings of Diaz et al. (US 5,886,854) to perform their functions.

Pertinent Prior Art


13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Khan et al. (US 5,930,075), which teaches a disk drive motor lubricant with a phenylnaphthylamine additive (lines 29-30 in column 7, for instance); and Karis et al. (US 5,940,247), which teaches a disk drive motor lubricant with a phenylnaphthylamine or dioctyldiphenylamine additive (lines 37-38 in column 3, for instance).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Craig A. Renner
Primary Examiner
Art Unit 2627

CAR